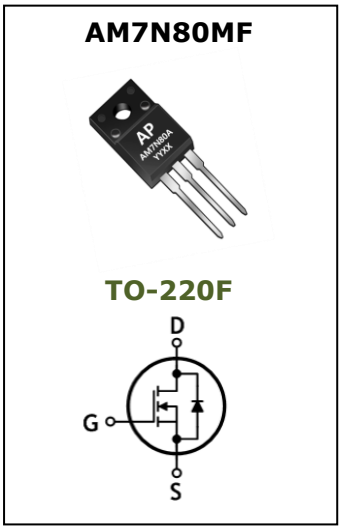
800V 7A Advanced N-Ch Power MOSFET

FEATURES

- High Voltage : BV_{DSS}=800V(Min.)
- Low C_{rss} : C_{rss} =15pF(Typ.)
- Low gate charge : Qg=40nC(Typ.)
- On-Resistance $R_{DS(on)}$=1.6Ω(Max.)



Marking Information

Row 1 : AP

Row 2 : Product Information

Row 3 : Date Code

- YY : Year Code
- WW : Week Code

Ordering Information

Part No	Package	Packing	Finish	Halogen	Packing Unit
AM7N80MF	TO-220F	Tube	Sn	Free	5,000ea

Maximum Ratings (Tc=25 °C, unless otherwise noted)

Characteristic	Symbol		Rating	Unit
Drain-source voltage	V_{DSS}		800	V
Gate-source voltage	V_{GSS}		±30	V
Drain current (DC)	I_D	Tc = 25℃	7	A
		Tc = 100℃	4.4	
Drain current (Pulsed) (Note 1)	I_{DM}		28	A
Power Dissipation	P_D		45	W
Single pulsed avalanche energy (Note 2)	E_{AS}		522	mJ
Avalanche current (Repetitive) (Note 1)	I_{AR}		7	A
Repetitive avalanche energy (Note 1)	E_{AR}		4.5	mJ
Junction temperature	T_J		150	℃
Storage temperature range	T_{stg}		-55~150	

* **Drain current limited by junction temperature**

Thermal Characteristic

Characteristic	Symbol	Rating	Unit
Thermal resistance, junction to case	$R_{th(j-c)}$	2.77	℃/W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	62.5	

Electrical Characteristics (T_C=25 °C, unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	I_D = 250uA, V_{GS}= 0	800	-	-	V
Gate threshold voltage	$V_{GS(th)}$	I_D = 250uA, V_{DS} = V_{GS}	3	-	5	V
Drain-source cut-off current	I_{DSS}	V_{DS} = 800V, V_{GS} = 0V	-	-	1	uA
		V_{DS} = 640V,T_C = 125℃			100	
Gate leakage current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V	-	-	±100	nA
Drain-source on-resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 3.5A	-	1.28	1.6	Ω
Forward transfer conductance (Note 3)	g_{fs}	V_{DS} = 30V, I_D = 3.5A	-	5.6	-	S
Input capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	-	1650	-	pF
Output capacitance	C_{oss}		-	135	-	
Reverse transfer capacitance	C_{rss}		-	15	-	
Turn-on delay time (Note 3,4)	$T_{d(on)}$	V_{DS} = 400V, I_D = 7.0A, RG = 25Ω	-	40	-	ns
Rise time (Note 4,5)	T_r		-	110	-	
Turn-off delay time (Note 3,4)	$t_{d(off)}$		-	65	-	
Fall time (Note 4,5)	t_f		-	70	-	
Total gate charge (Note 3,4)	Q_g	V_{DS} = 640V,V_{GS} = 10V I_D = 7.0A	-	40	-	nC
Gate-source charge (Note 3,4)	Q_{gs}		-	12	-	
Gate-drain charge (Note 3,4)	Q_g		-	15	-	

Source-Drain Diode Ratings and Characteristics (T_C=25 °C, unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source current (DC)	I_S	Integral reverse diode in the MOSFET	-	-	7.0	A
Source current (Pulsed) (Note 1)	I_{SM}		-	-	28	A
Forward voltage (Note 3)	V_{SD}	V_{GS} = 0V, I_S = 7A	-	-	1.4	V
Reverse recovery time	t_{rr}	I_S = 7.0A, V_{GS} = 0V dIF/dt = 100A/us	-	560	-	ns
Reverse recovery charge	Q_{rr}		-	4	-	uC

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 20mH, IAS = 7.0A, VDD = 50V, RG = 25Ω, Starting TJ = 25°C
3. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 2%
4. Essentially independent of operating temperature

Typical Electrical Characteristic

Fig. 1 I_D - V_{DS}

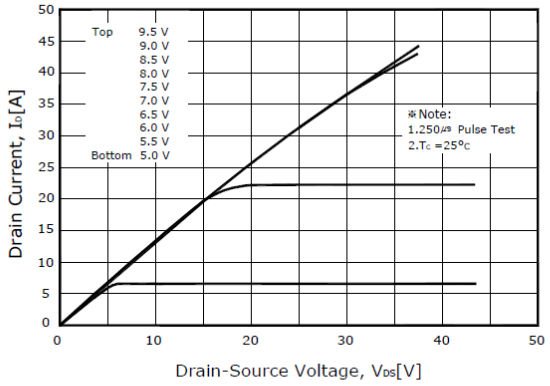


Fig. 2 I_D – V_{GS}

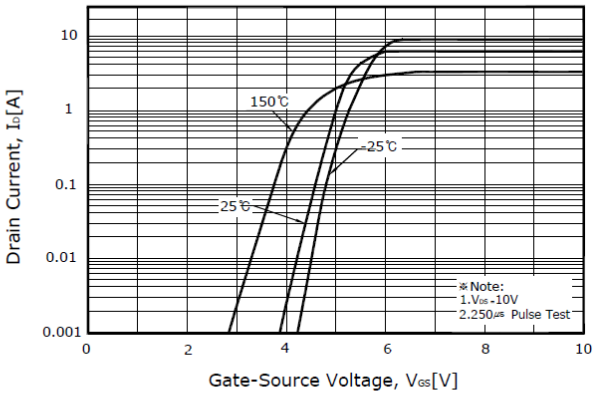


Fig. 3 $R_{DS(ON)}$ - I_D

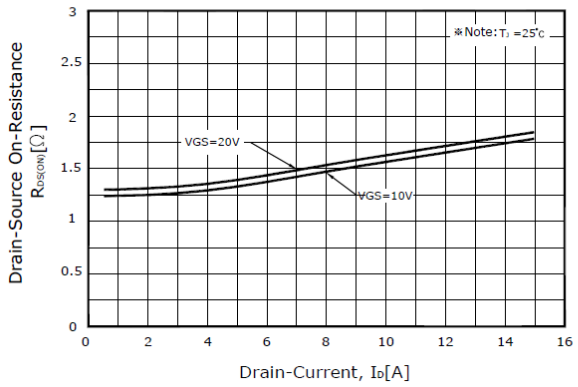


Fig. 4 I_S - V_{SD}

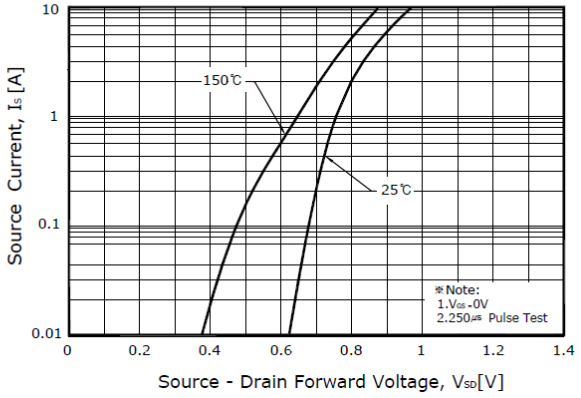


Fig. 5 Capacitance - V_{DS}

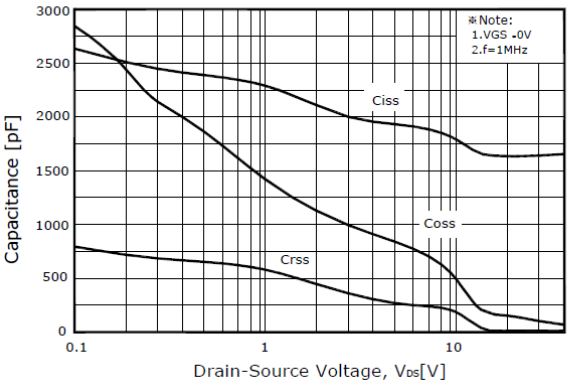
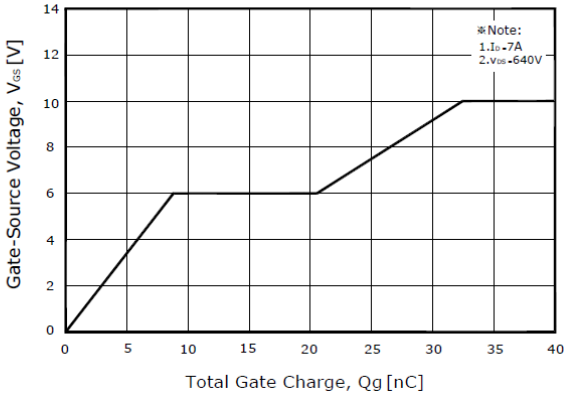


Fig. 6 V_{GS} - Q_G



Typical Electrical Characteristic

Fig. 7 BV_{DSS} - T_J

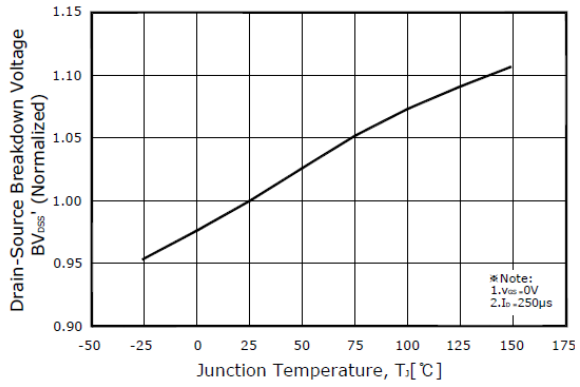


Fig. 8 $R_{DS(ON)}$ - T_J

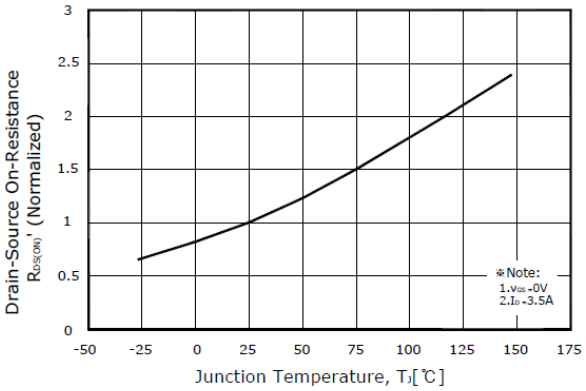


Fig. 9 Safe Operating Area

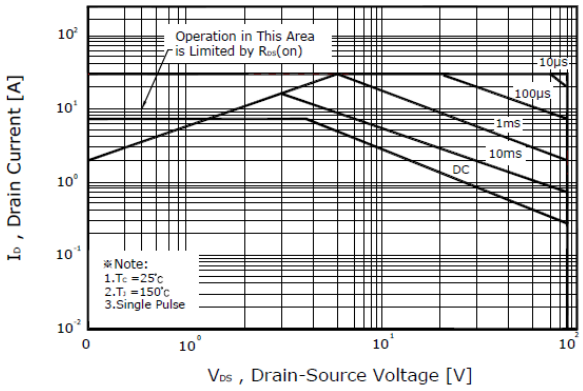


Fig. 10 I_D - T_C

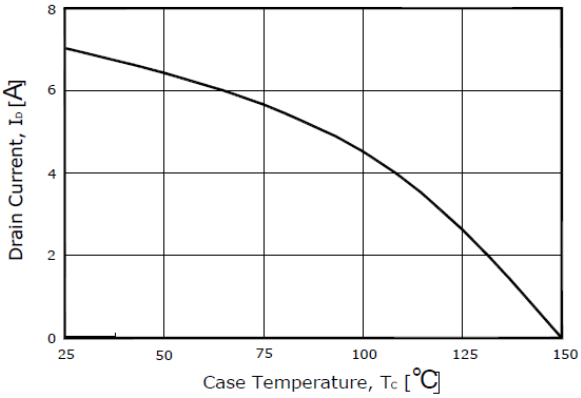


Fig. 11 Gate Charge Test Circuit & Waveform

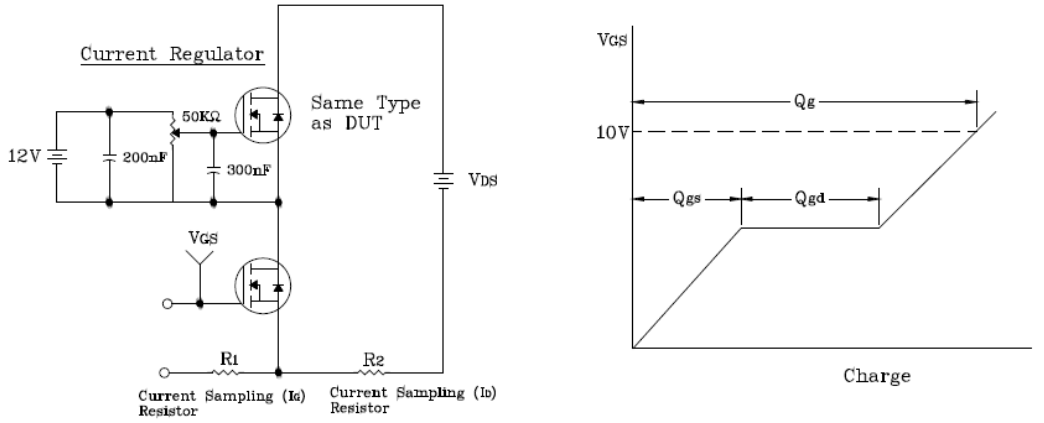


Fig. 12 Resistive Switching Test Circuit & Waveform

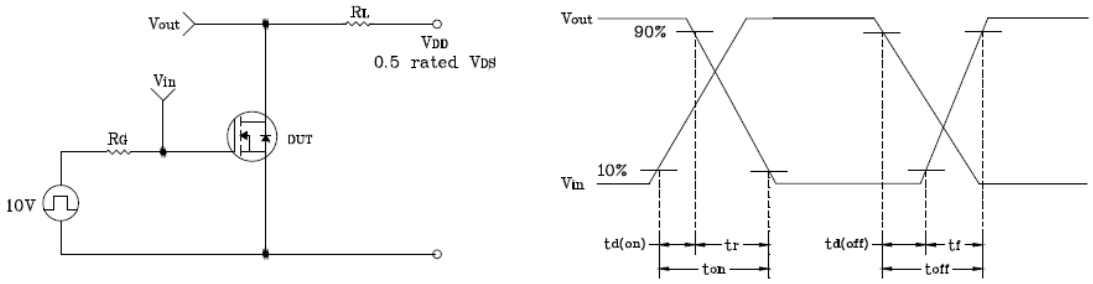


Fig. 13 E_{AS} Test Circuit & Waveform

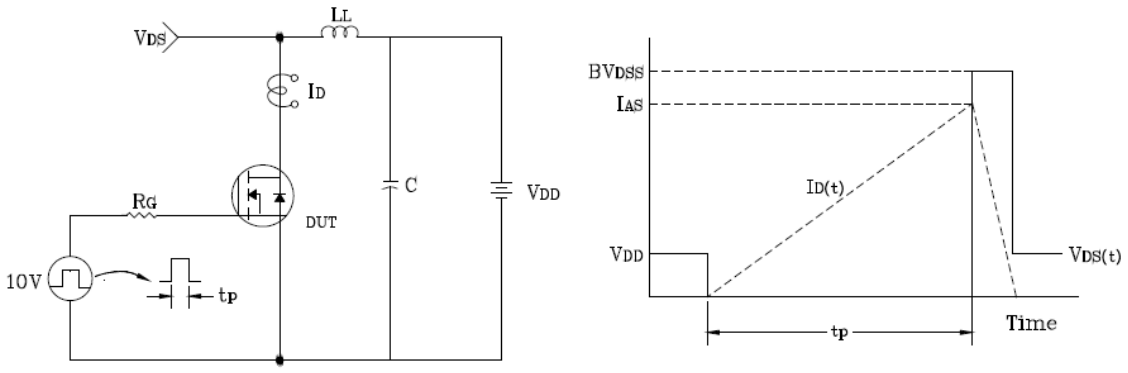
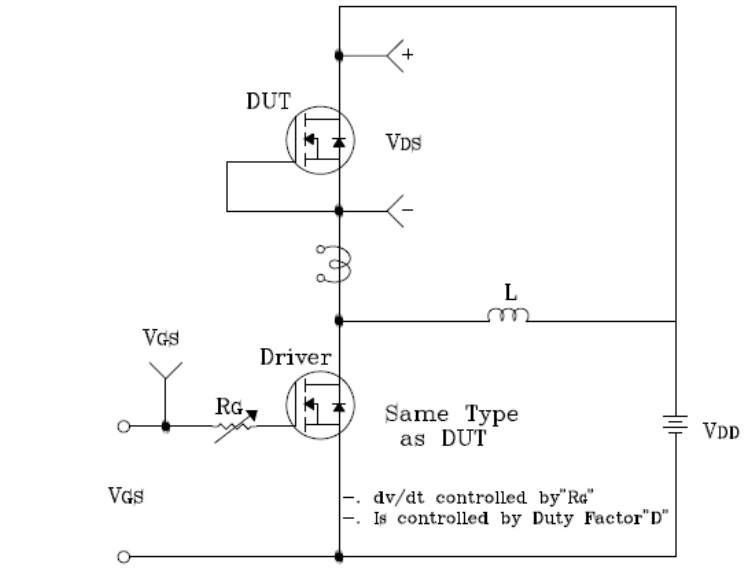
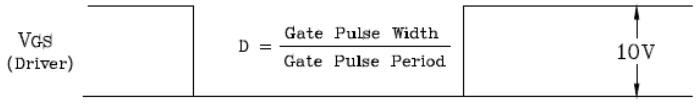
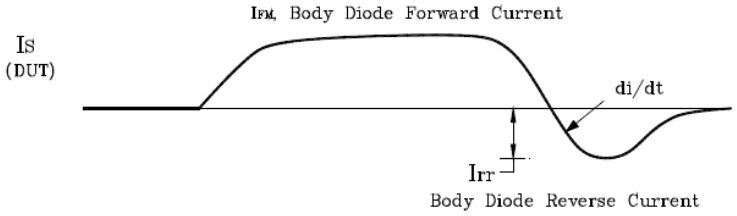
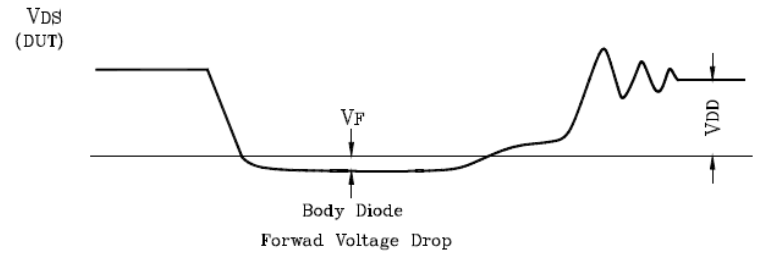


Fig. 14 Diode Reverse Recovery Time Test Circuit & Waveform



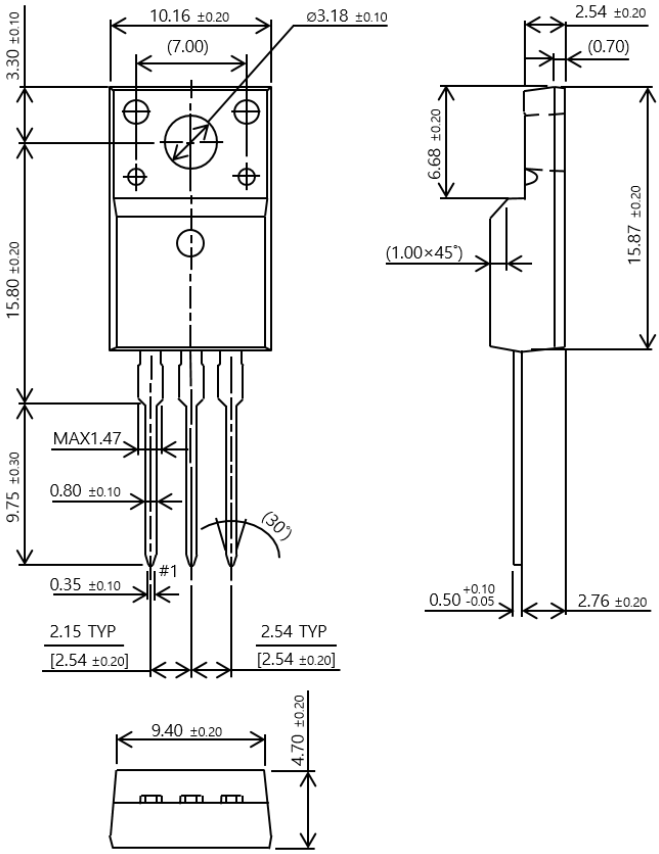






Package Dimensions

TO-220F



Revision History

No	Date	Contents
0	2021-08-31	Initial Brief Datasheet Release

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